

OPERATING INSTRUCTIONS

Knife Sharpener MMS



INS8500GB
03-2010-03

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1. INTENDED USE

The automatic knife sharpener MMS is intended for honing microtome knives for professional use in routine and research laboratories in the fields of biology, medicine and industry.

SLEE have produced and reconditioned steel and hard-metal (tungsten-carbide) knives

for decades in the factory in Mainz. However, it is not always economical to find a suitable factory for this service in your area or return the knives for reconditioning to us.

Therefore this low-cost microtome knife sharpener type MMS, is a valuable alternative and addition to our manufacturing programme.

2. SYMBOLS



Dangers, warnings and cautions are marked by this symbol



Special instructions regarding the operation of the instrument are marked by this symbol

3. SAFETY NOTES

The SLEE knife sharpener MMS is provided with the following safety features:

Lid Safety switch

MMS



The institution which owns the unit and the persons working with the unit, servicing or repairing it have the responsibility for a hazard-free use.

3.3 ELECTRICAL POWER CONNECTION

Do not use any extension lead.



Make sure that electric power is constant:

- This should be examined during installation of the unit by a competent person
- Use a dedicated fuse for the unit
- Do not connect another unit to the same power circuit.
- Before turning on the instrument, check if the voltage of the mains supply is identical with the name plate of the unit

3.6 WORKING WITH MICROTOME KNIVES

Microtome knives have extremely sharp edges and this can lead to injuries.

Please be extremely careful when handling microtome knives.











Do not place microtome knives at unsecured areas.

Never try to catch a falling microtome knife.

4. COMPONENTS

The SLEE knife sharpener MMS is provided with the following standard components:

	MMS
Cover	
Pivoting arm with locking ring	
Knife angle adjustment	
Knife holder For knives with a back < 10 mm.	
Glass honing plate 2 honing surfaces (coarse / fine)	
Operation manual	
Honing compound fine Bottle with 50 ml	
Honing compound coarse Bottle with 50 ml	

5. SPECIFICATIONS

Applicable knife profiles

Profile A, B, C and D

Applicable knife sizes

Profile A, B, C and D

100 – 250 mm

Speed

Variable, selectable

Dimensions and weight

[width x depth x height]

370 mm x 380 mm x 280 mm

Weight

17 kg

Power supply

Art.No. 10200000

230 V / 50 Hz

Art.No. 10200001

230 V / 60 Hz

Art.No. 10200002

115 V / 60 Hz

6. UNPACKING AND INSTALLATION

6.1 UNPACKING THE INSTRUMENT

Remove the upper wooden cover.

Remove the upper supporting foams.

Lift the instrument out of the wooden transportation case.

For repacking use the original cases. Keep the packing material.

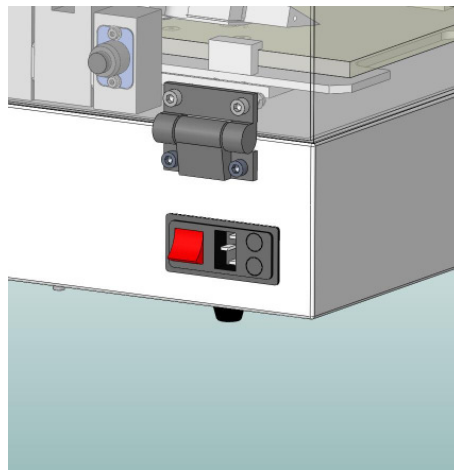
Place the instrument onto the selected bench.

6.2 INSTALLATION

The unit should be positioned onto a plane, vibration-free surface.

Connect the power line of the instrument to the power outlet on the rear and switch the instrument on.

For daily use, a power switch at the front side of the instrument can be used.



Power outlet on the rear of the instrument.

7. OPERATION OF KNIFE SHARPENER

7.1 LIFTING AND LOWERING OF PIVOTING ARM

Lifting

Hold the knife holder with thumb and index finger at the position of the red marked ring.

Lift the pivoting arm. The arm shows to the top and engages.

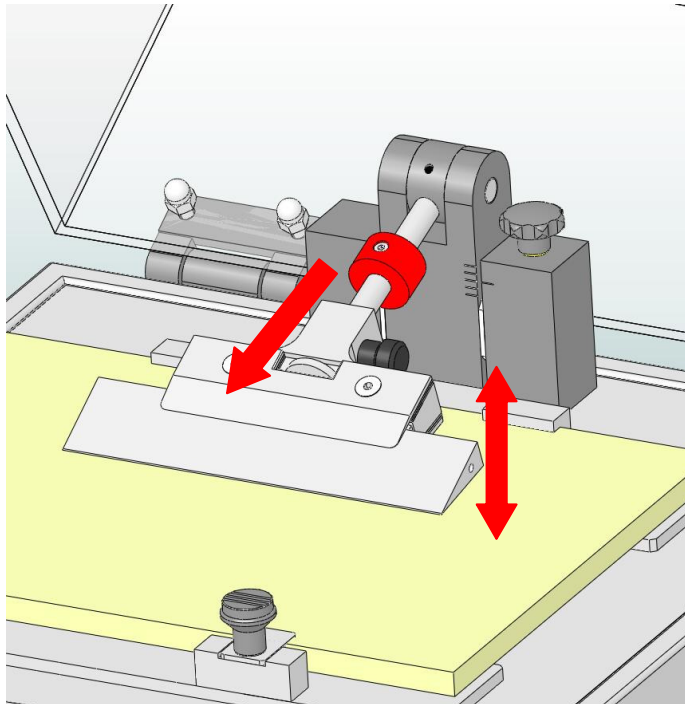
You can release the knife holder again.

Lowering

Hold the knife holder with thumb and index finger at the position of the red marked ring.

Pull ring in direction of arrow with other hand. The pivoting arm disengages.

Move knife holder down slowly.



Release of pivoting arm fixation. Lifting and lowering of pivoting arm.



Do not close cover when pivot arm is engaged - danger of collision!

7.2 INSTALLATION AND CHANGE OF GLASS PLATE

Lift pivoting arm until it engages.

Loosen honing glass plate fixation by pulling clamp in the front slightly up and twisting by 180°.

Lift and twist honing glass plate upside down or place new honing glass plate.

Orientate honing into the clamp at the rear and lower the glass plate.

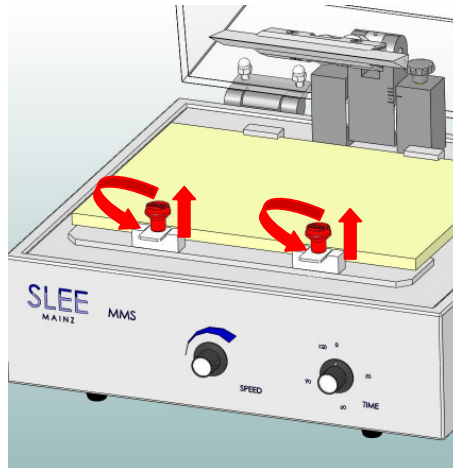
Tighten honing glass plate fixation by pulling clamp in the front slightly up and twisting by 180°.

The glass plate is now positioned and fixed.

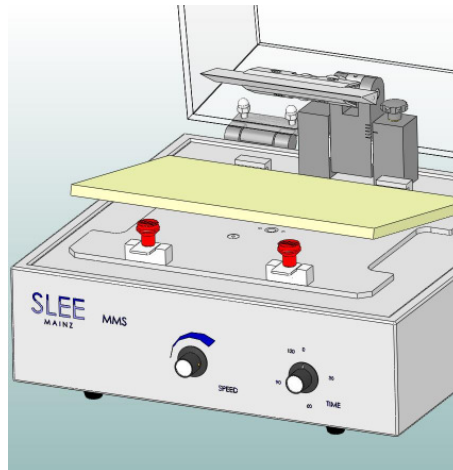


Microtome knives are very sharp. Risk of injury.

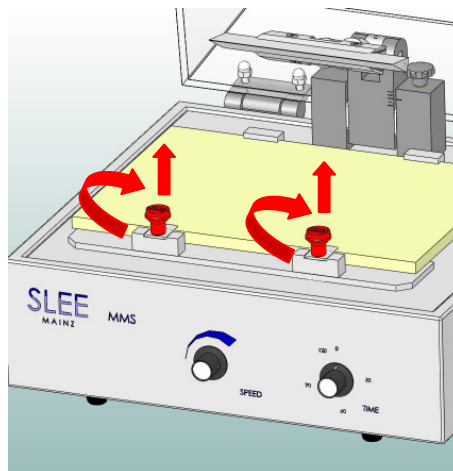
Optionally remove knife holder from pivoting arm for changing of honing glass plate.



Loosening of honing glass plate fixation.



Turning or changing of honing glass plate.



Fixation of honing glass plate

7.3 INSERTION AND REMOVAL OF KNIFE

The knife holder is suitable for knives with a back between 7 and 12 mm. If the knife back is smaller than 10 mm, separators should be removed.

For simpler fitting the knife holder can be dismantled from the unit. Loosen the screw on the side of the knife holder and pull it from the pivoting arm.

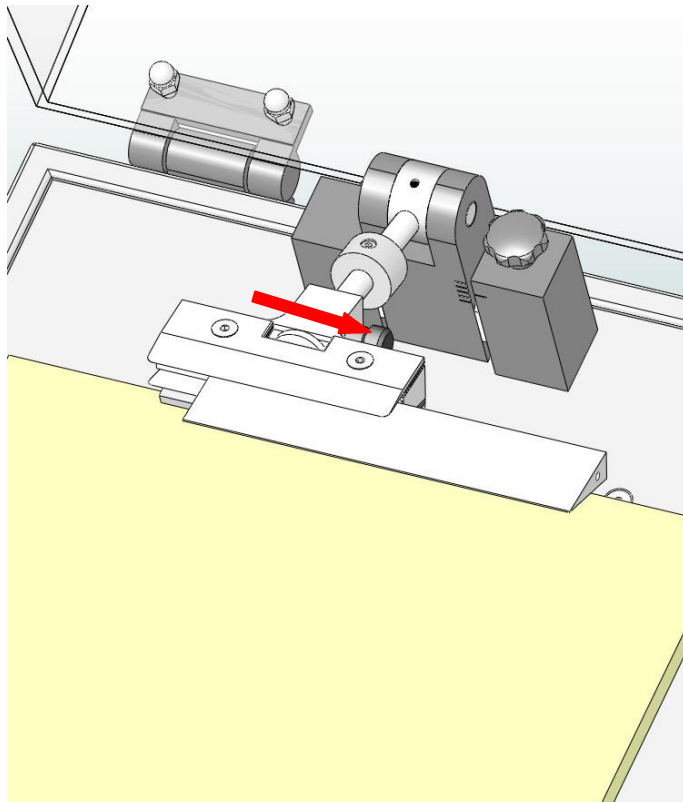
For simpler fitting the knife holder can be dismantled from the unit. Loosen the screw on the side of the knife holder and pull it from the pivoting arm.

Insertion of Knife

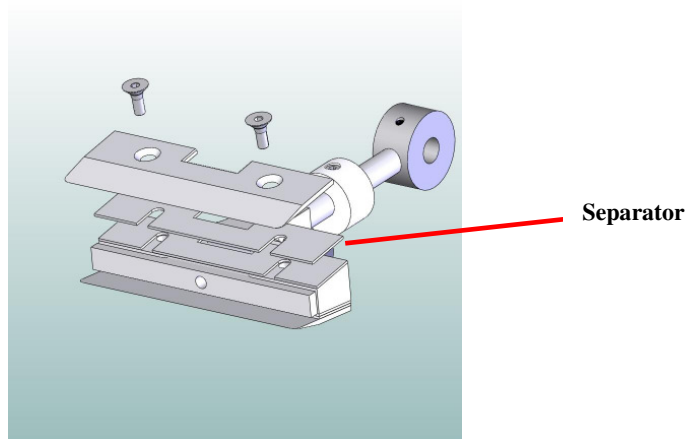
Push knife from the side into the knife holder. Turn the knobs that the knife is held safely by the knife clamps.

Removal of Knife

Loosen turning knobs. Swivel knife slightly to the top and bottom. Pull the knife from the side out of knife holder.



Insertion and/or removal of knife from knife holder.



Assembly of knife holder including separators.

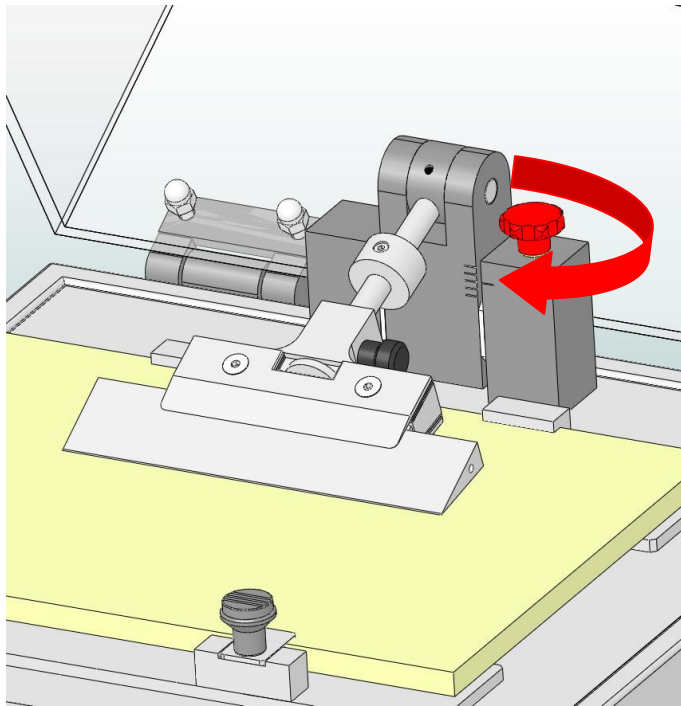


Microtome knives are very sharp. Hold knife only at the back or with a cloth in order to avoid injury!

7.4 KNIFE ANGLE ADJUSTMENT

The knife angle for sharpening can be changed by turning the knob.

The standard angle is in the middle of the scale, one line means 1°.



Knife angle adjustment with angle scale.

7.5 MOTOR DRIVE

You fit knife holder, lower pivoting arm and close cover.

Switch unit on by pressing the main power switch on the backside of the instrument.

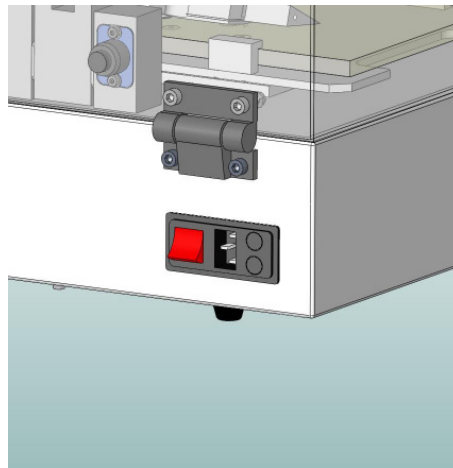
Turn speed control to medium speed.

Adjust time control to 10 minutes.

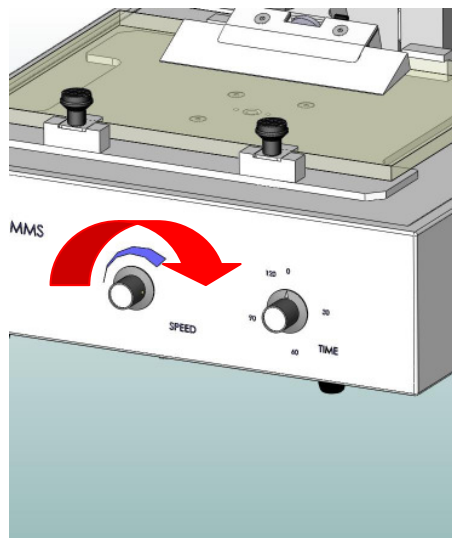
The glass honing plate starts moving.

Turn time control back to 0 to switch off the motor.

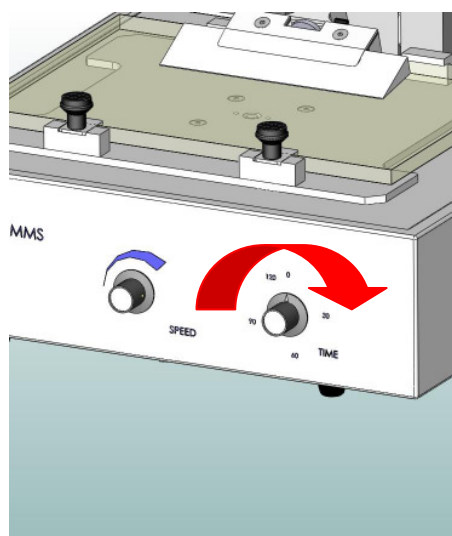
Switch unit off by pressing the main power switch.



Main power switch.



Setting of motor speed.



Setting of time controller.

7.6 SHARPENING OPERATION

Step 1

Switch on instrument.

Open cover.

Lift pivoting arm.

Orientate honing glass plate with smooth side up.

Step 2

Insert knife into knife holder.

Shake bottle with abrasion medium “coarse” until it is evenly mixed.

Approx. 1 minute mixing time.

Pour some honing compound onto glass plate under knife and approx 4 cm left and right from knife end.

Lower pivoting arm with installed knife and adjust knife angle.

Close cover.

Step 3

Sharpen knife at medium speed for 10 minutes (see section 7.5).

Step 4

Open cover after adjusted time is finished.

Lift pivoting arm.

Turn knife 180°, lower pivoting arm.

Close cover.

Step 5

Sharpen knife at medium speed for 10 minutes (see section 7.5).

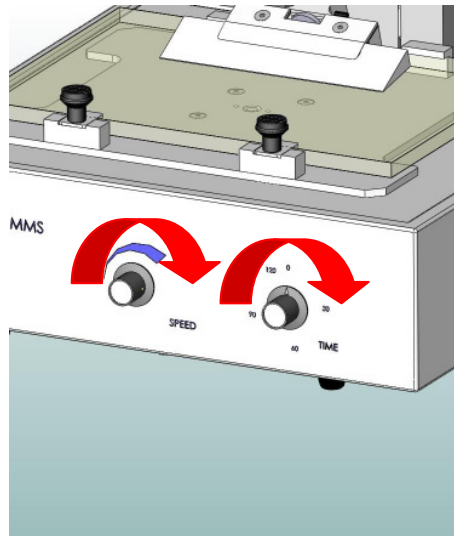
Step 6

Open cover after adjusted time is finished.

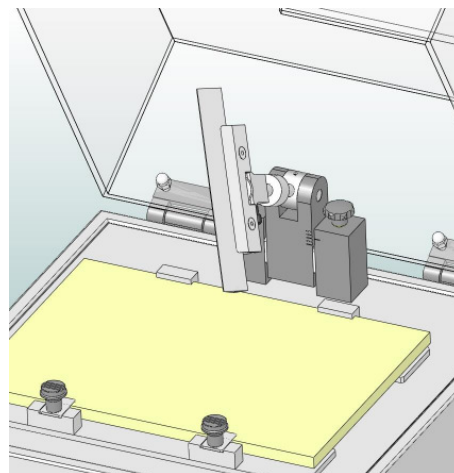
Lift pivoting arm.

Clean honing glass plate thoroughly to remove any remaining honing compound coarse.

Step 7



Setting of honing speed and time.



Turning of knife is only possible with lifted pivoting arm. Upon lowering of the pivoting arm, the knife will automatically orientate in a horizontal position.

Turn honing glass plate to other side (see section 7.2).

Step 8

Shake bottle with honing compound “fine” until it is evenly mixed.

Approx. 30 seconds mixing time.

Pour some honing compound onto glass plate under knife and approx 4 cm left and right from knife end.

Close cover.

Switch off instrument.

Step 9

Sharpen knife at medium speed for 10 minutes (see section 7.5).

Step 10

Open cover after adjusted time is finished.

Lift pivoting arm.

Turn knife 180°, lower pivoting arm.

Close cover.

Step 11

Sharpen knife at medium speed for 10 minutes (see section 7.5).

Step 12

Open cover after adjusted time.

Lift pivoting arm and remove knife.

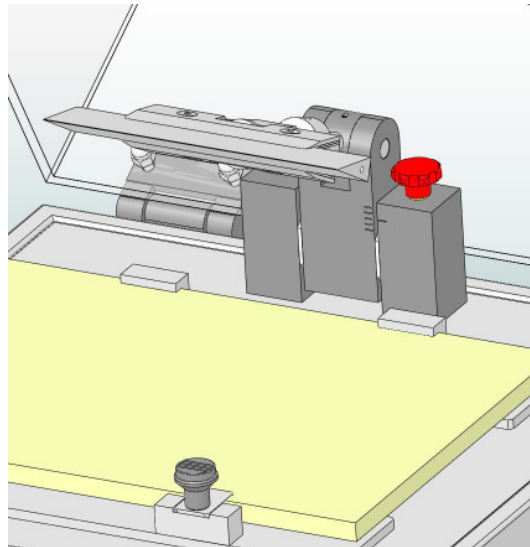
Step 13

Clean knife of honing compound.

Clean unit of honing compound

Lower pivoting arm.

Close cover.



Lifting of pivoting arm.

7.7 INSTRUCTIONS AND RECOMMENDATIONS

Sharpening is a very individual procedure, therefore the result depends on a few factors.

Knife material and the knife edge

Usually microtome knives consist of very hard material, necessitating the use of high quality grinding medium. A polishing of knife edge is mostly not sufficient. Therefore thorough shaking of medium is necessary, in order to achieve optimum concentration.

If the knife edge has slight kinks it is sensible to pre-sharpen coarsely. For this the coarse honing glass surface and the honing compound coarse is utilized. Then honing glass plate and knife are cleaned thoroughly in order to avoid contamination. The honing compound fine is used on the smooth side of the honing glass plate.

Sharpening time

The recommended time of 10 minutes is a maximum value, in general 6 minutes are sufficient.

Glass Plate

The glass plate consists of a smooth and a coarse side. When using the right medium this does not influence the sharpening result - the different sides have only been selected to minimize carryover of abrasion medium.

The knives slowly wear off material from the glass plate. Therefore it is best to start with the largest knife to allow the glass plate to be ground in. With extreme length differences a separate glass plate should be purchased for shorter and longer knives.

Cover

With an opening angle under 90° the cover stops in every position. If this is not case the hinges can be readjusted by turning the middle screw.

Knife Maintenance and Environmental Protection

Clean the knife before sharpening from any cutting residues. The grinding medium contains special oil which remains on the knives and at the same time maintains them.

Switch off unit if not in use for a longer period.

8. CLEANING AND MAINTENANCE

8.1 CLEANING

The recommended frequency of cleaning the knife sharpener depends on how frequently the instrument is used.



Wear protective clothing and disposable gloves according to Good Laboratory Practices.

Please take note of the safety aspects of the instrument.

Do not use acetone or xylene for cleaning the unit. Only use alcoholic media.

The hood should be cleaned with commercially available plastic cleaner.

Do not use alcoholic or organic solvents to clean the hood.

8.2 RECOMMENDED MAINTENANCE

Daily

Clean honing glass plate thoroughly after each use.

Close plastic cover when instrument is not in use.

Switch off the instrument at the power switch at the front side of the instrument when instrument is not in use.

8.3 RECONDITIONING

Before resharpener a knife, it should be examined under the microscope to determine the extent of damage to the edge. Severe nicks may require that the knife be returned for reconditioning. We will recondition your knife at our laboratory in Mainz, Germany.

REGRINDING

If required, we will remove nicks and imperfections or will re-profile.

RESHARPENING

The cutting edge is resharpener accurately.

STROPPING

This gives your knife a new appearance

INSPECTION

The profile of every edge is inspected under the microscope. Even a slight imperfection is rejected.

For reconditioning knives, please contact SLEE Medical via your local SLEE Medical distributor or directly:

SLEE medical GmbH

Tel. +(49) 61 31/9 58 71-0

Fax +(49) 61 31/9 58 71-722

mail@slee.de

<http://www.slee.de>

9. SERVICE

Internal components should only be serviced by technicians authorized by SLEE.

If technical service or spare parts are necessary, please contact your local SLEE Medical distributor. Please have the following information available:

- Complete contact details
- Type of instrument and serial number
- Place of instrument and name of user
- Purpose of service call
- Delivery date of the unit

If it is necessary to return the instrument, it must be cleaned and disinfected before delivery. It must be returned in its original packing.

If the instrument or parts thereof are sent back in a dirty or non-disinfected condition, SLEE reserves the right to return the parts to the debit of the customer.

10. Optional accessories

Honing compound coarse (50 ml)

#30012000

Honing compound fine (50 ml)

#30012001

Glass honing plate 2 honing surfaces (coarse / fine)

#30012002

Hexagon key

#10900004

Knife Profile C

Microtome knives 100 mm #28000002

Microtome knives 120 mm #28000010

Microtome knives 160 mm #28000026

Microtome knives 180 mm #28000034

Microtome knives 220 mm #28000046

Microtome knives 250 mm #28000054

Knife Profile D

Microtome knives 100 mm #28000003

Microtome knives 120 mm #28000011

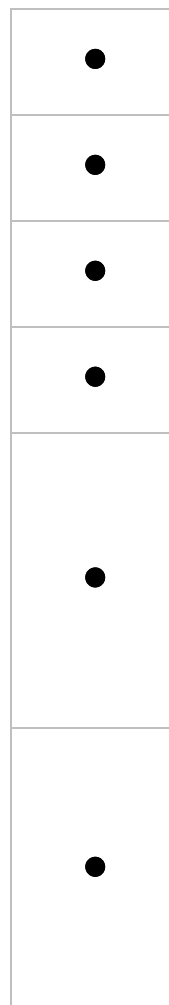
Microtome knives 160 mm #28000027

Microtome knives 180 mm #28000035

Microtome knives 220 mm #28000047

Microtome knives 250 mm #28000055

MMS



11. WARRANTY

SLEE Medical GmbH guarantees that the product delivered has been subjected to a comprehensive quality control procedure, and that the product is faultless and complies with all technical specifications and/or agreed characteristics warranted.

SLEE Medical GmbH guarantees that the instrument is manufactured under an ISO 9001 quality management system.

Unauthorized modification or repair by third party persons will void the warranty.

Only original SLEE spare parts must be used.

Guarantee claims can be put forward only if the instrument is used according to this manual and for the purpose described.

Mistakes and errors which occur because of improper use cannot be accepted.

12. DISPOSAL

The instrument or parts of the instrument must be disposed of according to existing local applicable regulations.

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